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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/207,546	12/08/1998	STEFAN DEGENDT	98-162-B	6949

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EXAMINER	
AHMED, SHAMIM	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/207,546	DEGENDT ET AL.	
	Examiner	Art Unit	
	Shamim Ahmed	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-33 and 35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-33 and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/8/04 have been fully considered but they are not persuasive.

Applicants argue that neither kashiwase et al nor Sehested et al, suggests that stabilization of ozone would lead to increase cleaning efficiency as observed by the present invention.

Applicants also argue that none of the cited prior art teaches or suggests that ozone decomposition plays any significant role in diminishing the cleaning efficiency of aqueous ozone.

In response to applicants's arguments, examiner states that the argument is not persuasive because Sehested et al teach that ozone is contineously decomposes to oxygen and acetic acid is a well-known stabilizer of aqueous ozone solution and also teach that acetic acid is added to ozone solution , wherein acetic acid retards the decomposition of ozone solution (see pages 1005-1006).

Since, ozone is contineously decomposes into the solution, this results the lowering of the concentration of ozone and obviously lower the cleaning efficiency of ozone in the solution.

Therefore, one of ordinary skilled in the art at the time of claimed invention would have been motivated to add an additive such as acetic acid in order to stabilize ozone in the solution in order to restore the cleaning efficiency.

Applicant's further noted that the presently invented process will enhance cleaning efficiency by 50%.

In response, examiner states that the modified kashiwase et al's process would do the same because the acetic acid will increase the cleaning efficiency by stabilizing ozone in the solution as discussed above.

For the above reasons, it is believed that the rejections to the claims are repeated herein as below:

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwase et al (5,378,317) in view of Sehested (J.Phys. Chem.)

As to claim 27, Kashiwase et al disclose a method for removing organic contaminants or residual organic substance after an etching process wherein, substrates having the organic contaminants emerged in an ozone- processing tank, in which ozone is injected as bubble into water (col.4, lines 28-36).

Kashiwase et al remain silent about the introduction of an additive acting as a scavenger.

However, Sehested et al teach that the introduction of an additive such as acetic acid acts as OH radical scavenger in aqueous ozone solution to stabilize ozone in the solution (see the introduction, page 1005).

Sehested et al also teach that the concentration of acetic acid is less than 1% molar weight (see result section at page 1006).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Sehested et al's teaching into Kashiwase et al's method for increasing the removal efficiency of the processing or cleaning solution by stabilizing ozone in the cleaning solution as taught by Sehested et al.

As to claim 28, Kashiwase et al teach that the temperature in the ozone-processing tank is maintained at a preferable range of 40 to 100^0 C, which is below 150 degree C (col.4, lines 52-59).

5. Claims 29-33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heyns et al (New Wet Cleaning strategies for obtaining highly reliable thin oxide) in view of Sehested et al (J.Phys.Chem.).

As to claims 29-32, and 35, Heynes et al disclose a wet cleaning process for silicon substrate, wherein an oxide is grown on the substrate to be cleaned using ozonated deionized water (see paragraph No. 8).

Heynes et al also disclose that the formed native oxide is removed and then a drying process for the substrate is introduced to avoid further pretreatment of the substrate (see also paragraph No.8).

Heynes et al fail to teach the addition of an additive acting as a scavenger.

However, Sehested et al teach that the introduction of an additive such as acetic acid acts as OH radical scavenger in aqueous ozone solution to stabilize ozone in the solution (see the introduction, page 1005).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Sehested et al's teaching into Heyns et al's cleaning method for increasing the removal efficiency of the cleaning solution by stabilizing ozone in the cleaning solution as taught by Sehested et al.

As to claim 33, Heynes et al disclose that the oxide removal is done by diluted hydrofluoric acid (HF) (see paragraph 8).

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re*

Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claim 27 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 49 of U.S. Patent No. 09/022,834. Although the conflicting claims are not identical, they are not patentably distinct from each other because the concentration of additive claimed in the instant application is within the range of the application No. 09/022,834.

8. Claims 27-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 27-28 of the copending Application No. 09/022,834. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to use fluid as a liquid.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Remarks

9. Applicant's response filed 04/08/2004 is acknowledged that a terminal disclaimer has been filed to overcome the double patenting rejections but the terminal disclaimer has not been matched with the file yet.

The double patenting rejections will be withdrawn upon receiving the terminal disclaimer.

Conclusion

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shamim Ahmed
Examiner
Art Unit 1765

SA
June 19, 2004

NADINE G. NORTON
SUPERVISOR EXAMINER